(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 May 2001 (25.05.2001)

PCT

(10) International Publication Number
WO 01/37229 A1

(51) International Patent Classification[7]: G07F 7/10, 19/00, H04M 1/725

(21) International Application Number: PCT/CA00/01370

(22) International Filing Date:
17 November 2000 (17.11.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2,289,884 18 November 1999 (18.11.1999) CA

(71) Applicant *(for all designated States except US)*: **WILDCARD COMMUNICATIONS CANADA INC.** [CA/CA]; 444 - 5th Avenue South West, Suite 1510, Calgary, Alberta T2P 2T8 (CA).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **POMERLEAU, Daniel, Guy** [CA/CA]; 3958 Edenstone Road, Calgary, Alberta T3A 3Z6 (CA). **KEASHLY, Dusty** [CA/CA]; P.O. Box 43, Irricanna, Alberta TOM 1BO (CA).

(74) Agents: **FRITZ, Joachim, T.** et al.; Borden Ladner Gervais LLP, 1000-60 Queen Street, Ottawa, Ontario K1P 5Y7 (CA).

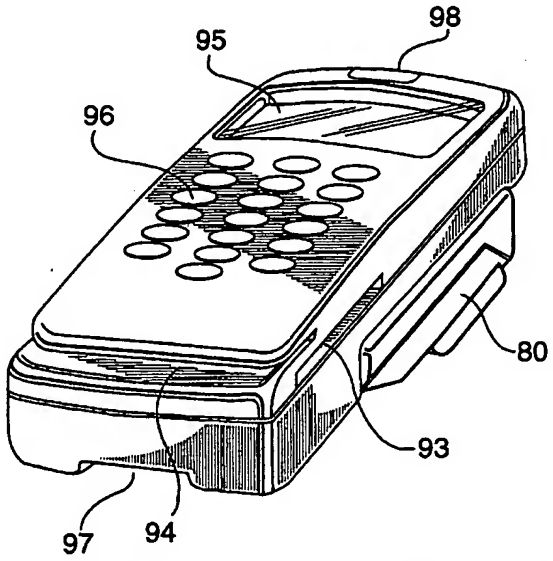
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*
— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ELECTRONIC SYSTEM HAVING VARIABLE FUNCTIONS



(57) Abstract: A modular communication and entertainment system is described enabling radio communication capabilities and entertainment capabilities through a base unit. The system includes at least one module which interfaces with a base unit which provides functionality to the base unit. The system is adaptable to permit development of the base unit and portable module independently of one another.

WO 01/37229 A1

Electronic System having Variable Functions

Field of the Invention

A modular electronics system is described for combining electronic functionalities of separate components. The system includes at least one portable module which interfaces with a base unit in order to combine or enhance the primary functionalities of the portable module and the base unit. The system enables development of the base unit and portable module independently of one another.

Background of the Invention

Consumer electronics products are numerous and widespread in use and functionality. Products such as televisions, radios, cassette players, compact disk players, cellular telephones, home phone systems, video cameras and computers are purchased in large numbers each year. Generally, a consumer purchases a product to perform a specific function or a limited range of functions. While each product may have a number of elements common to other products such as speakers, microphones, input devices and displays, separate products are purchased for the primary function of the product resulting in the purchaser buying and carrying duplicating elements.

In recent years, there has been a large increase in the use of radio products, both receiver products and transceiver products. Examples of receiver products include televisions, radios including AM, FM, SW, MB and GPS and transceiver products such as walkie talkies, cellular phones and CB and VHF radios.

In addition, the use of credit card and debit card swipe devices and smart cards have become increasingly popular as a form of conducting a financial transaction with both wired and wireless point of sale terminals.

It is also well known that certain electronics products such as cellular telephones quickly become obsolete with respect to the communications technology therein, requiring replacement of entire cellular phones as technologies change. For example, the cellular industry is currently seeing the movement from AMPS (analog) to CDMA/TDMA/GSM(USA)/GSM(Europe) digital as well as the introduction of dual mode

AMPS/CDMA AMPS/TDMA, or even tri-mode AMPS/CDMA/GSM, for example. This constant shifting in cellular technologies results in large numbers of phones being replaced within short periods of time, as little as one year in many instances. Thus, the consumer, in order to obtain a modest increase in the performance or functionality of a cellular phone, is obligated to replace the entire phone.

With advances in communications technologies, and in particular, the miniaturization of electronic processors, the addition of functionality to a processor can be achieved without significant increases in the volume or power requirements of the processor.

Accordingly, there has been a need for a system which overcomes the problems of changing or enhancing the functionality of an electronics products and more specifically, there has been a need for a system that places specific radio communication or other functionality on a portable module and that permits selective integration of the portable module into a base unit.

More specifically and with respect to cellular phones, a cellular phone provides the user with a highly convenient and efficient mode of communication enabling the user to communicate from almost any location within a cellular network. Cellular phones are generally used by either the business person as a business tool or by an individual for convenience and security.

In recent years, advances in the miniaturization of cellular phones have resulted in a large increase in their use as the phones have become smaller, more portable and less expensive. At the present time, the more popular phones on the market are those which are hand-held with an overall size in the range of a 6 inches long, 3 inches wide and 1 inch thick. These phones generally include rechargeable battery packs to provide the necessary power for portability.

These advances in miniaturization have also led to a decrease in the use of specific cellular phones, such as those specifically designed for use within an automobile, as greater overall convenience to the consumer can be achieved with a fully portable unit. Similar trends in

miniaturization can also be seen in other electronic equipment, including radios, stereos, computers, telephones and the like.

While individual electronic products are made smaller, there exists an inherent inefficiency with respect to this hardware because various electronic systems cannot interact with one another and share common features, if appropriate. This ultimately results in a duplication of hardware with the consumer purchasing separate components that perform the same functions.

For example, while cellular phones continue to be made smaller, certain disadvantages remain in their structure and use. Principally, cellular phones require unique power packs, display screens, keypads and antennae to operate, with each phone being built according to the specific standard associated with a particular manufacturer. For example, the power packs developed for use with one phone system cannot be used with another phone system. As well, a cellular phone power pack can usually only be recharged by connection to a specific manufacture's recharging unit. Similarly, power packs for portable computers, portable cassette players and portable compact disk players are not interchangeable with one another.

In the business world, a business person may, in addition to a cellular phone, be carrying additional hardware to form a virtual office, such as a portable computer, a paging unit and a dictation machine. For each piece of hardware, auxiliary power packs or chargers may be required adding to the overall volume and weight of the business hardware and leading to situations where a briefcase is filled strictly with the various peripheral pieces of charging hardware. Thus, the requirement for multiple pieces of peripheral hardware detracts from the overall portability of the hardware and may result in the desired hardware component being non-operational due to a lack of power either from the inconvenience of carrying an auxiliary power pack or charger or because power cannot be obtained from another piece of equipment such as a portable computer.

In the personal use setting, a user is most likely to require a cellular phone while in his or her car, while walking or while exercising. Again, since cellular phones are generally not adapted for use in a car, the use of a portable phone in the car may be ineffective and may

compromise the user's driving attention. Furthermore, a person walking or exercising may desire to use a portable compact disc or cassette player as well as carry a cellular phone. However, because of the separate components, one or other of the pieces of equipment may be left behind.

Thus, in both the business and personal use setting, numerous situations exist where portability requires a number of pieces of auxiliary hardware and the user may decide against carrying a cellular phone because of the inconvenience of the auxiliary hardware.

Another problem created by the duplication of hardware is the necessity to duplicate security features. A business person or other individual might need a user identification number, a password, an access code or any combination of the above to use a cellular phone, a car phone, a voice mail system, a facsimile mail system or any other communication tool. Generally, each such tool is a discrete piece of hardware activated by a separate identification number or access code. Consequently, an individual having to use several communication tools is inconvenienced by having to remember multiple numbers and codes. If a particular device's identification number or code is forgotten or remembered imperfectly, the device will be inoperable. While a user might write down the required numbers and codes, the written information can be misplaced, lost or stolen, resulting in the corresponding devices becoming inoperable to the rightful user and accessible to unauthorized users. Even if the same identification number or access code is used for all of a user's devices, security is still compromised as an unauthorized individual discovering the identification number or access code will be able to access multiple devices in the rightful user's absence.

Thus, there has been a need for a communication system that overcomes the above problems through its adaptability to the various environments in which a cellular phone is required and to the hardware in association with which or simultaneously with which the cellular phone may be used in association or simultaneously with.

In particular, there has been a need for a cellular phone system that provides the convenience of a standard battery powered cellular phone and that can also be conveniently and efficiently adapted to other hardware, such as computer systems

including portable computers and personal computers, radios including car radios, home stereo systems and portable radios such as portable compact disc or cassette tape players, standard and wireless telephone systems, video displays, and financial transaction terminals.

Past systems have proposed the use of thin cards having particular electronics on the card for adaptation to various devices. However, the use of a card having specifically defined physical dimensions to enhance the functionality of a given device also presents several disadvantages.

First, adapting an existing electronics device to receive a card requires significant modifications to the electronic device in order to provide an appropriate volume within the interior of the device to receive the card without interfering with the device's other functional components. In the past, devices have been modified to include a slot having a very specific size and shape and, thus a specific volume. Slots may also require specialized alignment and card-locking mechanisms.

Furthermore, insertion of the card into an adapted device requires a relatively high level of precision and dexterity, as the slot for receiving the card is typically very narrow. Thus, insertion of the card can present difficulties for individuals with lower visual acuity or poor coordination.

As well, removal of the card from a slot, which typically involves either activating a mechanical or electrical-mechanical mechanism or pulling on a small end of the card protruding from the host device, can also be difficult. In addition, a mechanical or electrical-mechanical mechanism has the potential to malfunction, preventing the card from being removed for use in a different device and necessitating repairs.

Furthermore, the connectors on the host piece of equipment are typically hidden in a narrow slot. The contacts are not visible for inspection in case problems arise when attempting to connect the card. They are not readily accessible for cleaning to improve the contact surface. Nor are they accessible for undertaking minor repairs.

Further still, the requirement that the card be manufactured according to the standard dimensions of the slot is very restrictive. The card must have a standard shape, reducing manufacturers' options for the arrangement of the electronic components within the card and largely eliminating an individual manufacturers' ability to distinguish their cards from those of competitors through the external design of the card. Rather, if a manufacturer desires to make a card with more components than will fit on a card of the standard size, the only option is to increase the length of the card such that it extends out of the slot. Similarly, a manufacturer desiring to provide an optional component to a card to enhance or upgrade its functionality will be severely restricted in its options for connecting the add-on to the card, as such cards are typically very thin and can only be made larger in the one direction.

In addition, such cards' thinness makes them fragile and prone to breakage, particularly if the card protrudes from its host device. While a thicker standard card size may be adopted, a thicker card size would require more extensive modification of the host device to accommodate a thicker internal slot. While the required connectors could be placed on the exterior surface of the host device, such a connection may be disadvantageous, as the stability afforded by the walls of the interior slot would be lost. In addition, the card would protrude awkwardly from the host device, detracting from both the compactness and the aesthetic look of the complete system.

Thin cards are also more susceptible to damage when detached from the host device.

Past systems have also proposed securing auxiliary devices to the periphery of a cell phone. Typically, this connection involves attaching the auxiliary device to the base of the cell phone with a simple plug. Although this design provides flexibility in size and shape, such systems do not provide interface stability and, in particular, rotational or axial loading which will often lead to damage of both the auxiliary device and cell phone. Furthermore, these past systems allow for the operation of the auxiliary device only through the standard interface of the phone body. In the event that the auxiliary device developer is unable to obtain relevant keyboard and screen protocols, then auxiliary controls be necessary in order to integrate the functionality of an auxiliary device.

Accordingly, there has been a need for a communication system in which the portable communication module can be selectively and securely integrated into the body of an audio equipment device or base unit, for example with a stabilized clip-on or snap-on connection. In particular, there has been a need for a system which takes advantage of reduced battery sizes to enable combined battery auxiliary function modules to be integrated to a base unit or cell phone body.

Still further, there has been a need for a communication system in which the portable communication module can be manufactured in a wide range of shapes and sizes with potential for growth in at least one dimension.

A review of the prior art indicates that such a system has not been developed.

United States Patent 5,550,861 discloses a computer peripheral combining the functionality of multiple devices including a pager, a fax machine and a data modem. The patent discloses a PCMCIA format card containing modem circuitry and telephone interface circuitry which may be connected either to a portable computer or to the modular components of a pager. This patent also describes circuitry which enables selective communication between the computer and the fax/modem or the pager. This patent does not disclose a system enabling radio telephone communication through a plurality of different audio equipment devices.

United States Patent 5,512,886 describes a paging system having a selective call receiver with computer interface capable of receiving at least one message and communicating the at least one message to an electronic information processing device and a proposed standardized communication interface. This patent does not disclose a system enabling radio telephone communication through a plurality of different audio equipment devices.

United States Patent 5,537,558 describes an apparatus enabling communication between a personal computer and other devices which may have the same or different operating protocols through a PCMCIA interface. This patent does not disclose a system enabling radio telephone communication through a plurality of different audio equipment devices.

United Kingdom Patent Application 2,264,613 describes a car telephone system comprising a portable telephone unit adapted for independent use or for connection to a conventional car entertainment system. This patent does not disclose a system enabling radio telephone communication through a plurality of different audio equipment devices.

United Kingdom Patent Application 2,289,555 describes a device for personal communication, data collection and data processing (a notebook computer) capable of receiving a PCMCIA radio module enabling telecommunication in all cellular mobile phone systems. This patent does not disclose a system enabling radio telephone communication through a plurality of different audio equipment devices.

PCT International Patent Application WO 96/39751 describes a modular telecommunication system comprising a radio transceiver and modem module adapted to be selectively secured within electronic audio equipment. This patent does not disclose a radio telephone communication module that can be selectively securely and stably attached to the exterior of audio equipment devices and that can be manufactured in a wide range of shapes and sizes with potential for growth in at least two dimensions.

Summary of the Invention

In accordance with one embodiment of the invention, a financial transaction terminal for operative attachment to a cellular phone or base station is provided comprising:

a body having a user interface for entry and display of financial transaction data, the body for selective and operative attachment to the cellular telephone or base station through an electrical connector on the body;

at least one card swipe device or card reader device on the body for reading card information required for a financial transaction;

wherein the geometry of the body permits independent operation of the cellular phone when the body is connected to the cellular phone.

In further embodiments, the body includes a credit/debit card swipe device and/or one or two smart card read/write devices, and/or a wireless communication system for communicating financial transaction data to a peripheral device such as a computer or a printer through the wireless communication system.

In another embodiment, the invention provides an electronic system for combining functionalities of separate electronic devices comprising:

a base unit having a first electronic functionality and a portable module having a second electronic functionality, the portable module for operative connection to the base unit via a docking interface, the base unit including a base unit docking system on the base unit for mating and operative connection with a portable module docking system on the portable module, wherein the geometry of the base unit, base unit docking system and portable module docking system allows independent operation of the base unit when the portable module is connected to the base unit.

Further embodiments provide that the base unit docking system and the portable module docking system include a base unit docking plate and portable module docking plate respectively and/or that the portable module and base unit include a wireless interface for operative connection of the portable module to the base unit.

In a more specific embodiment, the base unit is a cellular telephone having an auxiliary connector and a battery docking plate and the portable module includes a corresponding connector, the electronic system further comprising a communication plug for operative connection between the auxiliary connector and corresponding connector.

In still further embodiment, the base unit is a cellular telephone body having a first module docking plate and a transceiver docking plate, a first module docking plate and an interface docking plate or a first module docking plate, a transceiver docking plate and an interface docking plate.

In one embodiment, the portable module includes a battery for providing power to any one of or a combination of the base unit and portable module.

With respect to the functionality of the portable module, the portable module may include any one of or a combination of radio transceiver and radio receiver functionality selected from any one of or a combination of cellular, walkie talkie, very high frequency (VHF), citizens band (CB), amplitude modulation (AM), frequency modulation (FM), marine band (MB), short wave (SW), and global positioning system (GPS), entertainment functionality selected from any one or a combination of a cassette tape player, CD player or mini-disk player or financial transaction functionality.

Further functionality of the portable module may include functionality selected from any one of or a combination of scanner, fax, computer, calculator, fingerprint recognition, bar code scanning, card swipe devices including credit card, cash card, or smart card readers, digital camera, video camera, memory stick , cordless phone, video display, personal data assistant, pager, game pad, or alarm clock functionality.

In a specific embodiment, the portable module is a card-swipe device enabling financial transactions including any one of or a combination of credit card, debit card or smart card transactions.

In another specific embodiment, the portable module includes two smart card readers enabling smart card to smart card transactions.

In another embodiment, the portable module has a control interface for controlling the function of the portable module.

With respect to the base unit, the base unit may include an interface docking plate and the system includes an interface module, the interface module including a touch screen, voice recognition system or a keypad or a combination of a touch screen, voice recognition system and a keypad.

In yet another form of the invention, a mating system for connecting a portable module having a first electronic functionality with a base unit having a second functionality is provided, the mating system comprising:

a portable module docking system including a first surface on the portable module for placement adjacent the base unit and a connection system for reversibly attaching the portable module to the base unit for establishing an electronic linkage between the portable module and base unit wherein the geometry of the first surface and connection system do not interfere with the outer surfaces of the portable module to prevent operation of the second functionality of the base unit.

Brief Description of the Drawings

These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings, wherein:

FIGURE 1a is a rear view of a conventional cellular phone with the battery removed;

FIGURE 1b is a front view of a conventional cellular phone;

FIGURE 1c is an end view of a conventional cellular phone;

FIGURE 1d is rear view of a conventional cellular phone with a battery attached to the cellular phone;

FIGURE 1e is a rear view of a conventional battery for a cellular phone;

FIGURE 1f is a side view of conventional cellular phone with a battery attached;

FIGURE 2a are top and bottom views of first embodiment of a module for attachment to a cellular phone;

FIGURE 2b are top and bottom views of second embodiment of a module for attachment to a cellular phone;

FIGURE 2c are top and bottom views of a third embodiment of a module for attachment to a cellular phone;

FIGURE 2d is a side view of a cellular phone with the module of Figure 2c configured to a cellular phone;

FIGURE 2e is a schematic diagram of a first embodiment of a headset;

FIGURE 2f is a schematic diagram of a second embodiment of a headset;

FIGURE 2g is a side view of a cellular phone with the module of Figure 2b configured to a cellular phone;

FIGURE 2h is a side view of a cellular phone with the module of Figure 2a configured to a cellular phone;

FIGURE 2i is a end view of a communication plug;

FIGURE 2j is a bottom view of a communication plug;

FIGURE 2k is an end view of a module;

FIGURE 3a is a rear view of a base unit having two docking plates;

FIGURE 3b is a front view of a base unit;

FIGURE 3c is a rear view of a base unit having two docking plates with two modules engaged with the base unit;

FIGURE 3d is a top view of a cellular transceiver module;

FIGURE 3e is a top view of a first module for attachment to a base unit;

FIGURE 3f is a bottom view of a cellular transceiver module;

FIGURE 3g is a bottom view of a first module;

FIGURES 3h, 3i and 3j are side views of a base unit having different cellular transceiver modules and first modules attached to the base unit;

FIGURES 4a and 4b are front views of a base unit having a detachable interface module showing the interface module detached and attached to the base unit respectively;

FIGURES 4c and 4d are front and rear views of a first embodiment of an interface module respectively;

FIGURES 4e and 4f are front and rear views of a second embodiment of an interface module respectively;

FIGURE 5 is an underside perspective view of a financial transaction terminal in accordance with the invention;

FIGURE 5a is an bottom perspective view of a financial transaction terminal in accordance with the invention with attached cellular phone;

FIGURE 5b is an end view of a financial transaction terminal in accordance with the invention with attached cellular phone;

FIGURE 5c is an top end view of a financial transaction terminal in accordance with the invention with attached cellular phone;

FIGURE 5d is a bottom view of a financial transaction terminal in accordance with the invention with attached cellular phone;

FIGURE 5e is a top view of a financial transaction terminal in accordance with the invention;

FIGURE 5f is a side view of a financial transaction terminal in accordance with the invention with attached cellular phone;

FIGURE 6a is a schematic end view of a financial transaction terminal in accordance with one embodiment of the invention having dual smart card read/write slots;

FIGURE 6b is schematic side view of a financial transaction terminal in accordance with one embodiment of the invention showing details of a latching mechanism;

FIGURE 6c is a schematic side view of a financial transaction terminal in accordance with one embodiment of the invention showing details of a latching mechanism and an attached cellular phone;

FIGURE 6d is a schematic side view of a financial transaction terminal in accordance with one embodiment of the invention showing details of a latching mechanism and an attached cellular phone in an open position;

FIGURE 6e is a schematic side view of a financial transaction terminal in accordance with one embodiment of the invention showing details of a latching mechanism and an attached wireline base station; and,

FIGURE 7 is a broad-band RF detector circuit.

Detailed Description of the Invention

With reference to the figures, a modular electronics system including a base unit and at least one portable module is shown. The base unit and portable module enable different communication, entertainment, financial or other functionality with the base device when a portable module is connected to the base device.

A conventional cell phone 2 is shown in Figures 1a-1f. The cell phone includes a battery pack 1 which can be attached to the cell phone to provide power to the cell phone. The battery pack 1 includes an engagement and locking system 4, 13 for securing the battery pack to the cell phone body 2 and allowing a user to remove the battery pack for recharging. As shown in Figure 1e, the engagement and locking system includes a lower pin extension 13 and a spring fitting 4 for engagement with the cell phone body 2 thereby permitting the user to selectively engage and disengage the battery pack 1 from the cell phone 2.

The battery pack 1 is engaged against a docking surface 10 on the cell phone body 2 as shown in Figure 1d. The docking surface 10 includes respective slots 14, 12 for receiving the lower pin extension 13 and spring fitting 4 so as to releaseably secure the battery pack 1 against the cell phone 2. The mating surfaces 10 and 10a of the battery pack 1 and cell phone respectively are provided with corresponding power input/output pins 11/11a to permit power flow between the battery pack 1 and phone body 2 as shown in Figures 1d and 1e.

With reference to Figure 1b, a typical cell phone 2 also includes a microphone 3, speaker 5, screen or touch screen 6, microphone 7, keypad 8 and power switch 55. In addition, a typical cell phone will also include an auxiliary port 9 (Figure 1c) enabling transceiver, keypad, screen, audio input and audio output to and from the cell phone 2. A conventional cell phone 2 also includes an integral transceiver 2 which includes the appropriate electronic circuits to permit the cell phone to set up and break down a call on the cellular networks. Typical cell phone standards may include but are not limited to any one or a combination of a CDMA transceiver operating at 800/800MHz AMPS/Digital or

1900MHz or all three, a TDMA transceiver operating at 800/800MHz AMPS/Digital, or a GSM transceiver operating at 900/900 MHz AMPS/Digital, 1900MHz 1800MHz.

The cell phone 2 may also include a head set access port 52 for a headset 60 (Figure 1f). The head set will preferably include one or two earphones 44, microphone 46, docking plug 45 and optionally a supplementary antenna 47, explained in greater detail below.

In accordance with the invention, and as herein described, base units and modules adaptable to one another are described. With reference to Figures 2-4 , modules having communications, entertainment or other functionality are described which can be integrated into the body of a base unit and can be made functional. With reference to Figures 5 and 6, an electronic financial transaction terminal is described enabling wireless or wired financial transactions.

A first series of embodiments of a module is shown in Figure 2. In these embodiments, modules include appropriate electronics which may be interfaced to a cellular phone having an integral cellular transceiver. Accordingly, the Figure 2 embodiments describe modules which provide auxiliary functionality to the cell phone. These electronics may include functionality enabling for example, radio transceiver (including for example, cellular, walkie talkie, VHF or citizens band), radio receiver (including for example, AM/FM/MB/SW/GPS), scanner, fax, computer, calculator, tape player, CD player, mini-disk, fingerprint recognition devices, bar code scanners, card swipe devices including credit card, cash card, and smart card readers, digital camera, video camera, memory stick, cordless phone, video display, personal data assistant, pager, game pad, alarm clock and/or battery functionality.

With specific reference to Figure 2a, top and bottom views of a module 33 are shown. Module 33 resembles an existing battery pack in terms of the connection system used to physically connect the module 33 onto the cell phone body. In this embodiment, the functionality of module 33 is activated via the keyboard 8 and/or screen 6 (or touch screen or voice recognition system) of the cell phone 2.

The electronics of the module 33 are interfaced to the cell phone 2 through a direct hard link provided by a communications plug 35 as shown in Figures 2d, 2g, 2h, 2i and 2j. The communications plug includes a latching and contact system 36 which enables operative connection of the module 33 to the cell phone body 2. Preferably the module 33 has dimensions to allow the communications plug 35 to insert into the module connection area 10 of the cell phone body 2 utilizing an existing auxiliary port 9 on the cell phone 2. As shown, the connection plug 35 interfaces between the auxiliary port 9 on the cell phone and the data port 51 as shown in Figures 2d, 2g and 2h.

A battery may be integral to module 33 or, alternatively, the module may include a further connector for transferring power from an alternate battery which may be located at another location (not shown).

With reference to Figure 2b, an alternate embodiment of an electronic module 40 is shown. In this embodiment, the module includes function-specific electronics which may be interfaced to the cellular phone as described above. These electronics may include electronics selected from the electronics systems as identified above. In this embodiment, the module 40 includes an auxiliary screen (or touch screen or voice recognition system) 39 and/or keyboard 57 and card swipe 48 wherein the functionality of the module 40 is invoked via the auxiliary keyboard 57, or screen 39. The module 40 may include a separate power switch 54.

In another embodiment, the functionality of the module 40 may be invoked through keyboard 8 on the cell phone.

With reference to Figure 2c, a still further embodiment of an electronic module 41 is shown. In this embodiment, the module 41 has an alternate keyboard 58 and screen 43 (or touch screen or voice recognition system) layout which may be optimal for a specific electronics system.

Still further, modules may include a headset audio I/O port 49 allowing direct connection or wireless connection of the module to a headset as shown in Figure 2d. This may be

desirable if audio I/O cannot be fed through communication plug 35 or a wireless link or during times when the cell phone 2 was receiving/sending or engaged in a "Call".

Figures 2d, 2g and 2h show side views of different modules 33, 40 and 41 having different thicknesses configured to a cell phone 2. As shown, modules 40, 41 may include a card swipe device with slots 48 or a mini-disk player 78 whereas module 33 may strictly include entertainment functionality.

In further embodiments, specific software and/or hardware can be used to invoke actions for activating, deactivating or enhancing functionality between the cell phone and module, ~~such as~~ suspending a module's functionality when required or invoking functionality when the cell phone is not actively engaged. In a specific embodiment, implementation of an RF detector system (see Figure 7) within a module 41 can suspend a module's functional operation during the cell phones "Call" sequence and then reactivate the module upon completion of a call.

In a still further embodiment, a dual plug headset 61 (Figure 2f) can be utilized in order to access both the cell phone access port 52 and module access port 49. A dual plug headset may include plug (s) 53 earphone (s) 62, microphone 63, and an optional supplementary antenna 64. A supplementary antenna may be required for the specific functionality of certain radio receiver/transceiver modules.

With reference to Figures 3a-3j, further embodiments are described. In these embodiments, a base unit 50 includes speaker 5, antenna 3, power on/off switch 66, screen or touch screen 6, keypad 8, access connector 9, microphone 7 and headset I/O point 65 as described above. In the embodiments shown in Figure 3, the base unit 50 is generally similar to the cell phone body 2 described above in Figures 1 and 2.

The embodiments of Figure 3 are different to those described above by virtue that the base unit 50 includes a second module docking plate 21 for operatively connecting a cellular transceiver module 17 to the base unit 50. The second module docking plate includes a separate attachment system on the base unit 50 having corresponding connectors 20, 15 and 18, 16 as well as corresponding contacts 19, 28 for keyboard/screen/antenna/audio

I/O/power interface connections as necessary between the base unit 50 and transceiver module 17. The cellular transceiver module will include appropriate cellular transceiver electronics as described above. In this embodiment, a specific base unit 50 is developed to enable a cellular transceiver module to be operatively connected to the base unit 50 as well as other modules.

Figure 3a shows a rear view of an embodiment of a base unit 50 having the general dimensions of a typical cell phone. In this Figure, both the first and second modules are removed. The first docking plate 10 shows two series of electrical connectors, 11 and 22 for operatively connecting the electronics of the first module to the base unit 50 which may include power connectors and data connectors respectively. Similarly, the second docking plate 21 shows a series of electrical connectors 19 for operatively connecting the electronics of the second module to the base unit 50. Figure 3b shows a front view of the base unit 50. Figure 3c shows a rear view of a base unit 50 having two modules 17, 1 mated with the base unit 50. Figures 3d and 3e show top views of the first and second modules 17, 1 respectively detached from the base unit 50. Figures 3f and 3g show bottom views of the modules 17, 1 detached from the base unit and their corresponding connectors 29 and 28 for mating connecting with the corresponding connectors 11, 19 on the base unit 50. Note that Figure 3g illustrates a single set of connectors on module 1 indicating that in this particular embodiment of module 1, module 1 provides power only to the base unit 50.

As shown in Figures 3h, 3i and 3j , the dual module docking capabilities of the base unit 50 allow different sized modules 1, 25, 26, and 30 to be configured to the base unit 50 without requiring modification of the base unit 50.

With reference to Figures 4a-4b, a further embodiment of a base unit 50 is shown. Figures 4c-4f show further embodiments of specific modules 69, 70. The base unit 50 is different to the base unit 50 described above by virtue of a third docking plate 77. The third docking plate 77 and associated module provides the added functionality of a customizable interface enabling an application specific interface to be configured to the base unit for the desired functionality of a particular module which may be configured docking plates 10 or 21. For example, an application specific interface may be configured to the base unit 50 in order to enable use of the device for applications such as a barcode scanner, finger printing

device, digital camera, video camera or other device. Appropriate interfaces for such systems may include barcode reader, touch screen, voice recognition or camera input systems.

More specifically, Figures 4a and 4b show a front view of a base unit 50 having a third docking plate 77, the docking plate having appropriate electrical connectors 11 and 22. Figure 4b shows module 69 connected to the base unit 50. Figures 4c and 4d show front and rear views of a module 69. Module 69 may be a typical cell phone keypad and would be provided with electrical connectors 31, 27 for connection to corresponding connectors 11 and 22 on the base unit 50. Figures 4e and 4f show an alternate example of an interface module 70 in which the module provides a touch screen for the input of data or commands to the base unit 50. Similarly, as for other embodiments, module 70 has connectors 67, 68 for connection to connectors 11, 22 respectively on the base unit 50.

As in other embodiments, the module will include an appropriate latching and connection system 71, 72 and 75, 76 enabling the modules 69, 70 to be operatively connected to the base unit 50.

Geometry of the Docking System

As indicated above, the base unit 50 includes at least one docking plate 10, 21, 77 for connecting a module to the base unit 50 or cell phone 2. In particular, the geometry of the respective docking plates on both the portable modules and base unit permits portable modules having different physical dimensions to be attached to the base unit provided that the portable module retains a common docking plate mechanism. That is, the geometry of the docking plates permits modifications in the physical size of a portable module in at least one dimension (for example, thickness) while still permitting connection of the portable module to a base unit. Accordingly, the system allows for the functionality of a portable module to be modified without a corresponding modification to the base unit. In addition, the docking plate provides a secure and stable interface connection which minimizes the risk of torsional or rotational movement with respect to each other and thus, the likelihood of damage.

It is also possible to expand the dimensions of a particular module in three dimensions provided the mating connectors between the module and base unit is respected. That is, a module can be wider than the base unit and/or wrap around the base unit, if desired.

In further embodiments of the invention, it is envisaged that a wireless infra-red link or RF link may be utilized between the module and the base unit. Accordingly, if the module and base unit are designed to include a wireless data link, attachment of a module to a base unit may establish or activate wireless exchange of data between the module and base unit.

Base Unit

In the embodiments shown in Figures 1-4, the base unit is shown as generally corresponding to that of a cell phone. However, the base unit may also have a primary functionality not strictly related to the functionality which may be added to the base unit through a portable module. For example, a base unit may be an operative cellular phone, computer (portable and non-portable), mini-disk player, cassette player and/or recorder, compact disk players DVD player, digital camera, video camera or other electronic device.

Portable Modules

The portable modules which may be configured to a base unit may include any one of or a combination of the following functionalities including radio transceiver (including for example, cellular, walkie talkie, VHF or citizens band), radio receiver (including for example, AM/FM/MB/SW/GPS), scanner, fax, computer, calculator, tape player, CD player, mini-disk, fingerprint recognition devices, bar code scanners, card swipe devices including credit card, cash card, and smart card readers, digital camera, video camera, memory stick, cordless phone video display, personal data assistant, pager, game pad, alarm clock or battery functionality. Specific modules may combine the above functionalities.

In the specific examples of radio transceiver functionality, by attachment of the appropriate portable module to a base unit, the base unit may be operated so as to enable the user to engage in two-way radio communication. For example, a walkie-talkie module may configured to a base unit enabling the use of a base unit, such a cell phone body, as a walkie talkie. Similarly, another class of base unit, such as a portable video camera could

be configured with a walkie-talkie module to enable operation of the video camera as a walkie talkie.

In the specific examples of radio receiver functionality, through attachment of the appropriate portable module to a base unit, the base unit may be operated so as to enable the user to tune and listen to radio stations or receive and display GPS information.

In the specific example of a financial transaction terminal, a card swipe/transceiver module 20 or separate card swipe and transceiver modules may be configured to a base unit enabling the base unit to wirelessly transmit and receive transaction data to and from financial institutions. A card swipe module may be capable of reading and writing to smart cards and/or debit/credit cards with a reader slot. Optionally, the card swipe module may be provided with an integral printer to provide a printed record of a transaction (not shown). An auxiliary screen may also be provided. Specific embodiments of financial transaction terminals are discussed in greater detail below.

Other specific modules may provide functionality useful between different base units and modules. For example, a mute button can be provided on a module to mute sound from a radio in the event of an incoming call. Similarly, in the event that a radio receiver is configured to the base unit, the user could tune and listen to a radio station through the cell phone. In this case, the portable module could provide the additional functionality that if the user received a cell phone call, the user would have the option of allowing the caller to listen to the radio if the user chooses to place the caller on hold.

Electronic Financial Transaction Terminal (EFTT)

In further embodiments and with reference to Figures 5-5f and Figures 6-6e, an electronic EFTT 80 is described. The EFTT of Figures 5-5f is a portable module specifically adapted for attachment to a cellular phone. The underside 90 of the EFTT includes a surface having a profile corresponding to the outer underside surface of a cell phone. The underside of the EFTT also includes a mating surface 91 corresponding to the end of the cell phone. The EFTT includes a serial connector 92 adapted for connection with a corresponding connector on the cell phone with a male/female connection system and a locking mechanism to secure the cell phone to the EFTT device. The locking mechanism

is best seen in Figures 6b-6e where a spring loaded clip 100 is used to bias the cell phone against the EFTT serial connector 92. Connection of the cell phone to the EFTT is accomplished by the user inserting the spring loaded clip into an appropriate receiving area of the cell phone and biasing the cell phone against the spring loaded clip 100 to allow the end of the cell phone to clear the EFTT serial connector. Upon clearing the EFTT serial connector 92, the cell phone is rotated against the EFTT underside 90 and a mating connection made between the respective connectors of the EFTT and cell phone by sliding the cell phone against the EFTT.

The embodiment shown in Figures 5-5f is shown to include a smart card reader/writer 93 on one side of the EFTT and a card swipe device 94 on the end of the EFTT to allow both smart card and credit/debit transactions to occur through the EFTT and cell phone.

As shown in Figures 5a and 5e, the system also includes a keypad 96 and screen 95 for entry and display of financial transaction data. As shown, the EFTT also includes a port 97 for charging the EFTT batteries as well as a wireless data port 98 for transferring data to a peripheral device such as a computer or printer (not shown) for storage and/or printing of the data pertaining to a specific transaction. Wireless data transfer to a peripheral device may be achieved by various standards including infra-red and/or radio frequency such as blue-tooth.

Accordingly, at the time of a wireless transaction using the EFTT, if a peripheral device such as a printer is in direct line of site (infrared) or in the vicinity (RF) of the EFTT, a hard-copy of the transaction can be provided to either of or both of the vendor and purchaser. Alternatively, a peripheral device such as a computer can be used to store the transaction data in a specific format.

Specifically the EFTT permits various financial transactions including a debit card transaction, a credit card transaction and a smart card transaction to occur. With respect to a smart card, the EFTT may act as a cash machine by enabling funds to be downloaded to a smart card.

Swipe Card/Dual Smart Card Reader

With reference to Figure 6, another specific embodiment of a EFTT 110 is shown having a single swipe card reader and dual smart card read/write slots 102. Accordingly, this embodiment allows for both credit card/debit card transactions, smart card to smart card transactions as well as credit/debit card to smart card transactions to be conducted through the EFTT. In the case of a smart card to smart card transaction, cell phone system support is not required to clear the transaction and, accordingly, the portable module 110 can be used independently of the cell phone 80.

Figure 6e also shows an alternate embodiment of a base station to which a portable module may be configured. In this embodiment, the base station 120 has wireline telephone functionality for providing the interface 122 between the EFTT and the financial clearing houses using wireline. The base station 120 may include other base station functionality as described above.

Furthermore, specific functionality may be introduced to enable developers of modules to effectively interface their modules to existing base units for which the engineering specifications of that base unit may not be available. For example, in the case of a cellular phone for which the keyboard and screen protocols are not known by a module developer, the module developer may incorporate specific functionality within the module which will allow the use of the module while the cell phone is not being used and will shut-off the module in the event that a call is received by the cell phone. By way of example, a broadband RF detector circuit as shown in Figure 7 may be incorporated into a portable module so as to detect an incoming call. In this case, the circuit would, upon determining RF activity of the cell phone provide an output signal to disable the function of the module. Specifically, RF signals received by the antenna are half-wave rectified by diode D1. The resulting pumped DC voltage across D1 will exceed the forward breakdown voltage of diode D2 causing capacitor C2 to charge. D2, C2 and R5 will form a voltage peak detector circuit with a decay period controlled by the ratio of R5 to C2.

The resulting detector voltage across C5 is presented to the negative input of the comparitor. When the voltage across C2 exceeds that of the threshold voltage presented by V+, R1 and R2, the comparator output will change from a high voltage to 0V.

Discrimination for recognizing the desired RF signal from within a general RF environment is achieved in two phases. Initially, the length of the antenna stub of the cell phone provides a level of frequency discrimination due to the resonant length of the antenna. Secondly, the bandwidth of D1, the voltage drop across D2, the comparator peak detector frequency response and the comparison threshold level provide the overall sensitivity of the circuit. Further refinement of the frequency discrimination can be achieved by including a bandpass filter between the antenna and D1.

WHAT IS CLAIMED IS:

1. A financial transaction terminal for operative attachment to a cellular phone or base station comprising:

a body having a user interface for entry and display of financial transaction data, the body for selective and operative attachment to the cellular telephone or base station through an electrical connector on the body;

at least one card swipe device or card reader device on the body for reading card information required for a financial transaction;

wherein the geometry of the body permits independent operation of the cellular phone when the body is connected to the cellular phone.

2. A financial transaction terminal as in claim 1 wherein the body includes a credit/debit card swipe device and a smart card read/write device.

3. A financial transaction terminal as in claim 1 wherein the body includes a credit/debit card swipe device for reading a credit/debit card and two smart card read/write devices for direct funds transfer between two smart cards.

4. A financial transaction terminal as in any one of claims 1-3 wherein the body includes a wireless communication system for communicating financial transaction data to a peripheral device.

5. A financial transaction terminal as in claim 4 wherein the financial transaction terminal includes means for communicating with any one of or a combination of a computer or a printer through the wireless communication system.

6. A financial transaction terminal as in any one of claims 1-5 wherein the financial transaction terminal includes a radio frequency discrimination circuit for detecting cellular telephone use and means for deactivating the module if the radio frequency discrimination circuit detects an incoming cellular call.

7. An electronic system for combining functionalities of separate electronic devices comprising:

a base unit having a first electronic functionality and a portable module having a second electronic functionality, the portable module for operative connection to the base unit via a docking interface, the base unit including a base unit docking system on the base unit for mating and operative connection with a portable module docking system on the portable module, wherein the geometry of the base unit, base unit docking system and portable module docking system allows independent operation of the base unit when the portable module is connected to the base unit.

8. An electronic system as in claim 7 wherein the base unit docking system and the portable module docking system include a base unit docking plate and portable module docking plate respectively.

9. An electronic system as in any one of claims 7-8 wherein the portable module and base unit include a wireless interface for operative connection of the portable module to the base unit selected from any one of or a combination of radio frequency or infra-red.

10. An electronic system as in any one of claims 7-9 wherein the base unit is a cellular telephone having an auxiliary connector and a battery docking plate and the portable module includes a corresponding connector, the electronic system further comprising a communication plug for operative connection between the auxiliary connector and corresponding connector.

11. An electronic system as in claim 7 wherein the base unit is a cellular telephone body having a first module docking plate and a transceiver docking plate.

12. An electronic system as in claim 7 wherein the base unit is a cellular telephone body having a first module docking plate and an interface docking plate.

13. An electronic system as in claim 7 wherein the base unit is a cellular telephone body having a first module docking plate, a transceiver docking plate and an interface docking plate.

14. An electronics system as in claim 7 wherein the portable module includes a battery for providing power to any one of or a combination of the base unit and portable module.

15. An electronic system as in claim 7 wherein the portable module includes any one of or a combination of radio transceiver and radio receiver functionality selected from any one of or a combination of cellular, walkie talkie, very high frequency (VHF), citizens band (CB), amplitude modulation (AM), frequency modulation (FM), marine band (MB), short wave (SW), and global positioning system (GPS), entertainment functionality selected from any one or a combination of a cassette tape player, CD player or mini-disk player or card swipe functionality.

16. An electronic system as in claim 7 wherein the portable module includes functionality selected from any one of or a combination of scanner, fax, computer, calculator, fingerprint recognition, bar code scanning, card swipe devices including credit card, cash card, or smart card readers, digital camera, video camera, memory stick , cordless phone, video display, personal data assistant, pager, game pad, or alarm clock functionality.

17. An electronic system as in claim 7 wherein the portable module is a card-swipe device enabling financial transactions including any one of or a combination of credit card, debit card or smart card transactions.

18. An electronic system as in claim 17 wherein the portable module includes two smart card readers enabling smart card to smart card transactions.

19. An electronic system as in claim 7 wherein the portable module has a control interface for controlling the function of the portable module.

20. An electronic system as in claim 7 wherein the base unit includes an interface docking plate and the system includes an interface module, the interface module including a touch screen, voice recognition system or a keypad or a combination of a touch screen, voice recognition system and a keypad.

21. An electronic system as in claim 7 wherein the base unit is a cellular phone and the portable module includes an RF discrimination circuit for detecting cellular telephone use and means for deactivating the module if the RF discrimination circuit detects an incoming cellular call.

22. A mating system for connecting a portable module having a first electronic functionality with a base unit having a second functionality comprising:

a portable module docking system including a first surface on the portable module for placement adjacent the base unit and a connection system for reversibly attaching the portable module to the base unit for establishing an electronic linkage between the portable module and base unit wherein the geometry of the first surface and connection system do not interfere with the outer surfaces of the portable module to prevent operation of the second functionality of the base unit.

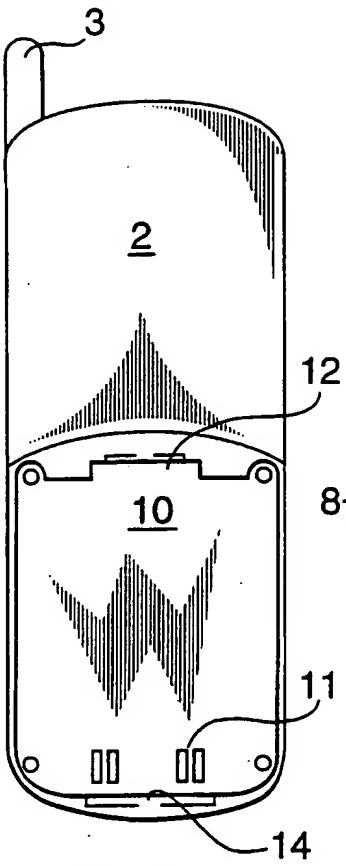


FIG.1a
PRIOR ART

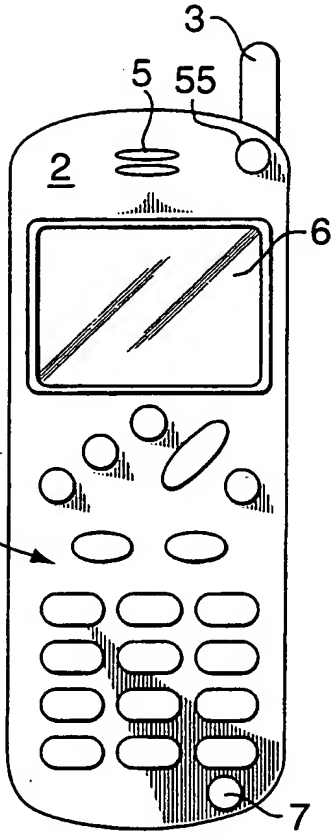


FIG.1b
PRIOR ART

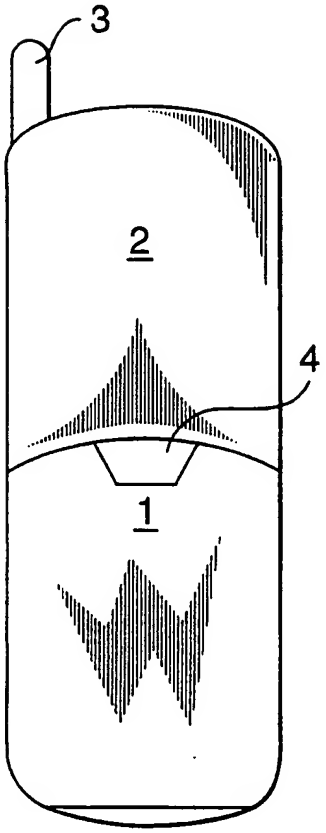


FIG.1d
PRIOR ART

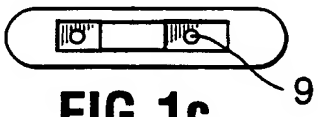


FIG.1c
PRIOR ART

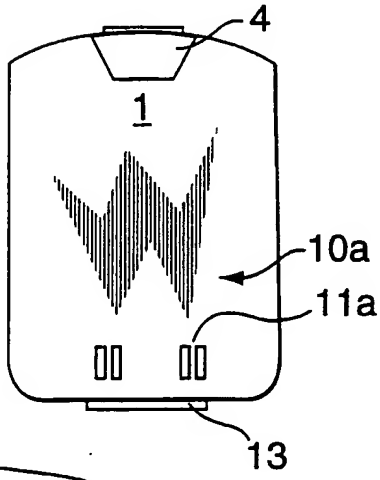


FIG.1e
PRIOR ART

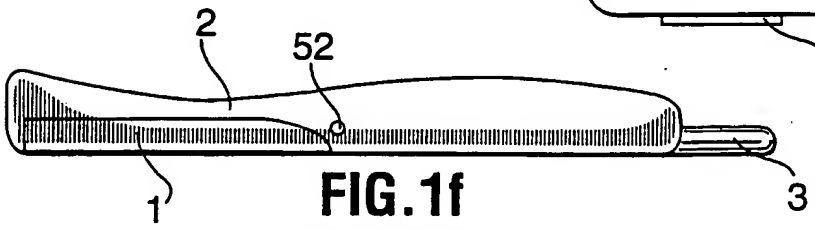


FIG.1f
PRIOR ART

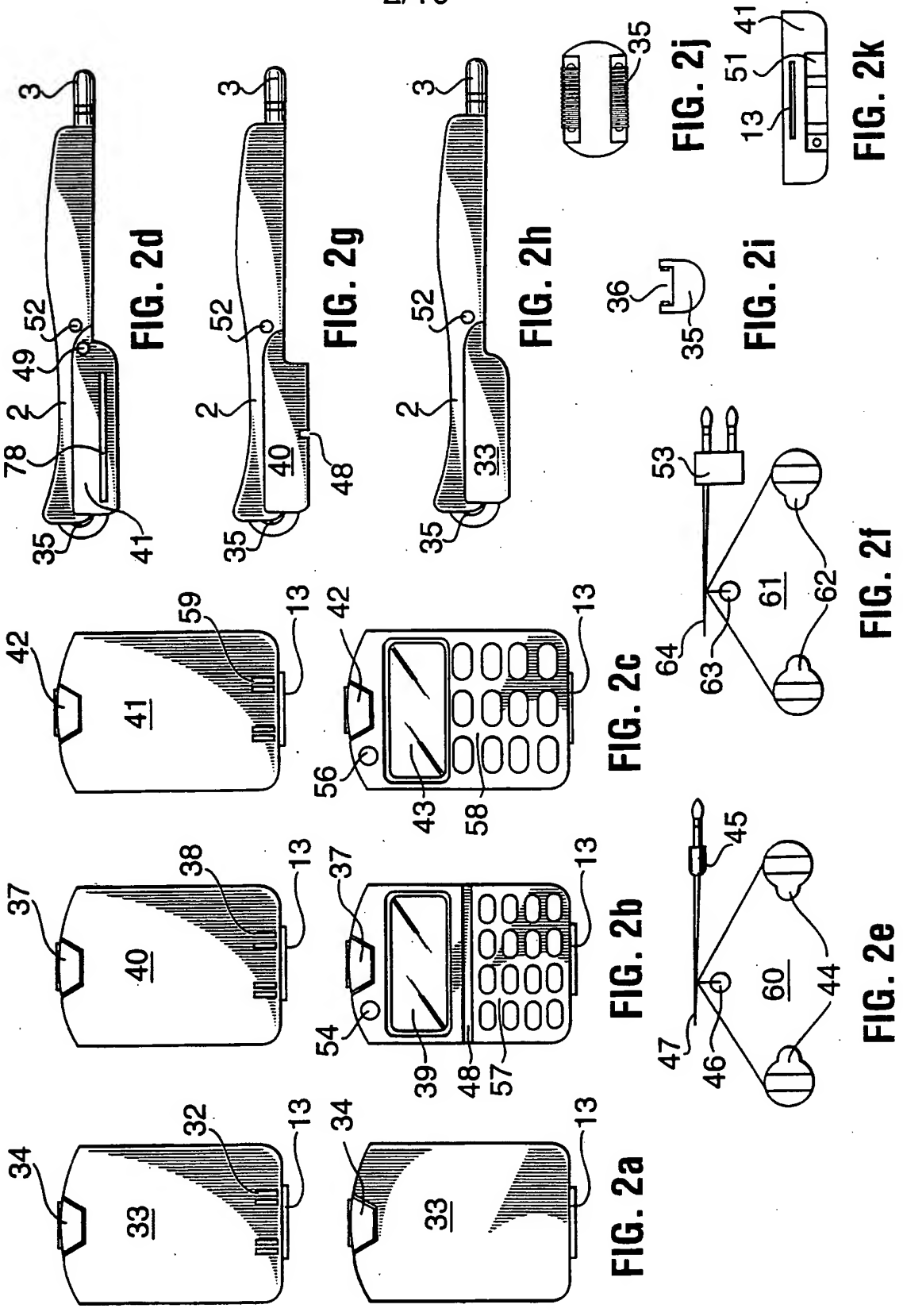


FIG. 2a
FIG. 2b
FIG. 2c
FIG. 2d
FIG. 2e
FIG. 2f
FIG. 2g
FIG. 2h
FIG. 2i
FIG. 2j
FIG. 2k

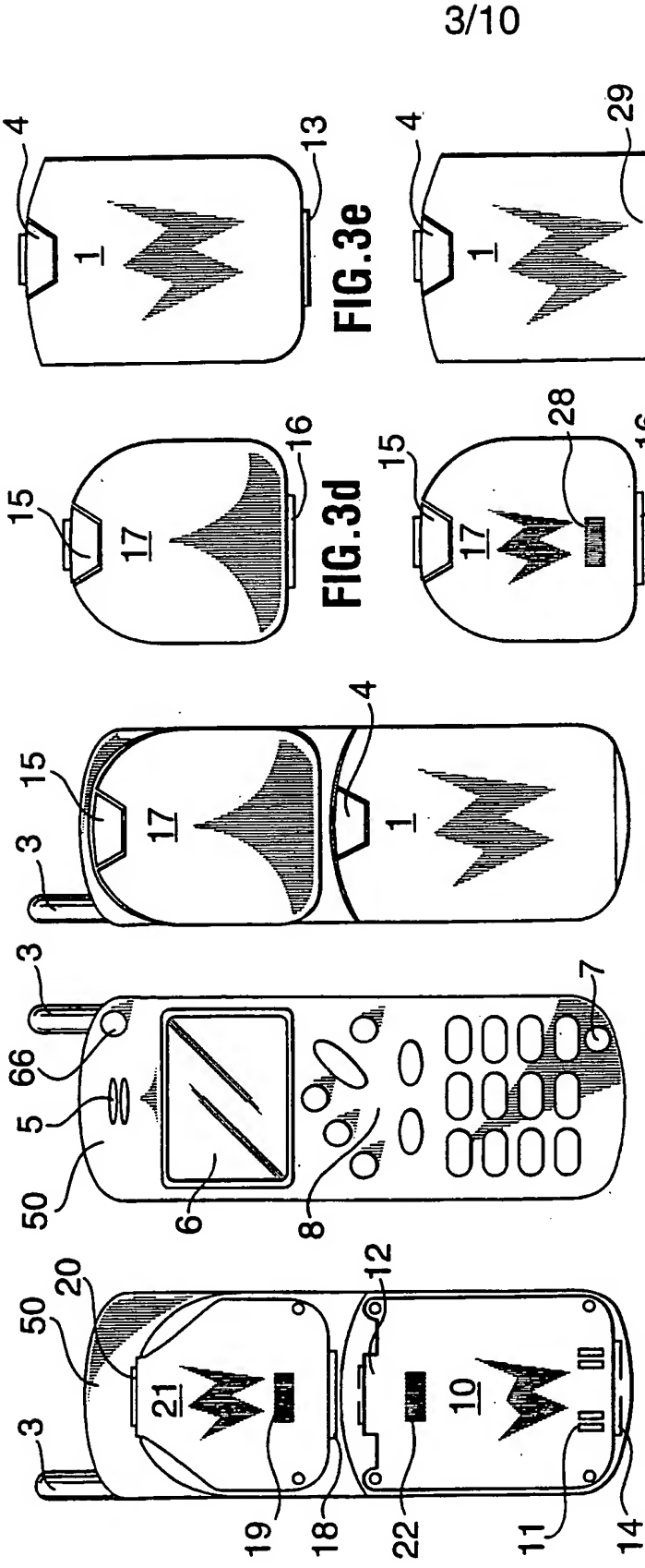


FIG.3a FIG.3b FIG.3c FIG.3d FIG.3e FIG.3f FIG.3g FIG.3h FIG.3i FIG.3j

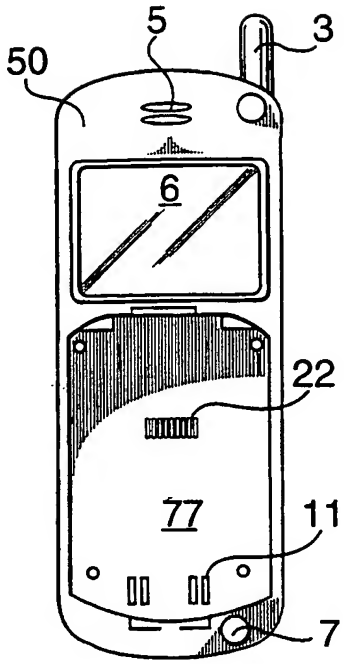


FIG.4a

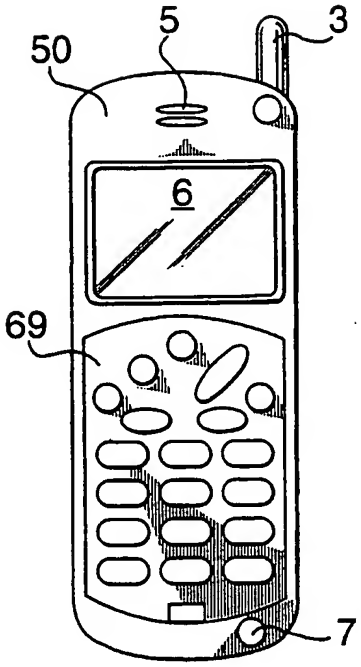


FIG.4b

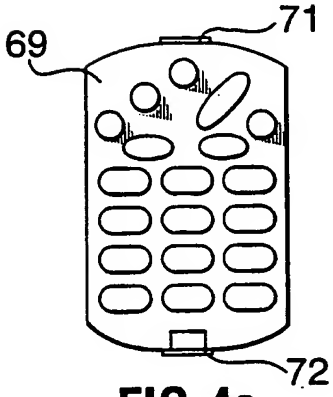


FIG.4c

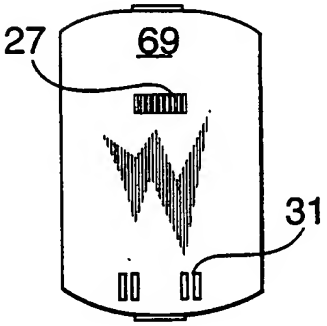


FIG.4d

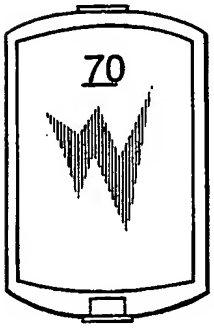


FIG.4e

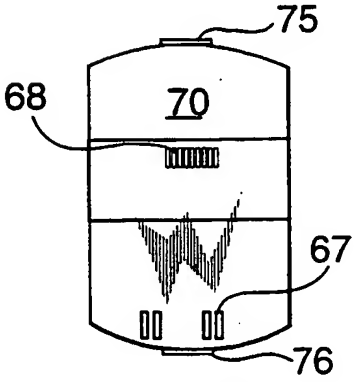


FIG.4f

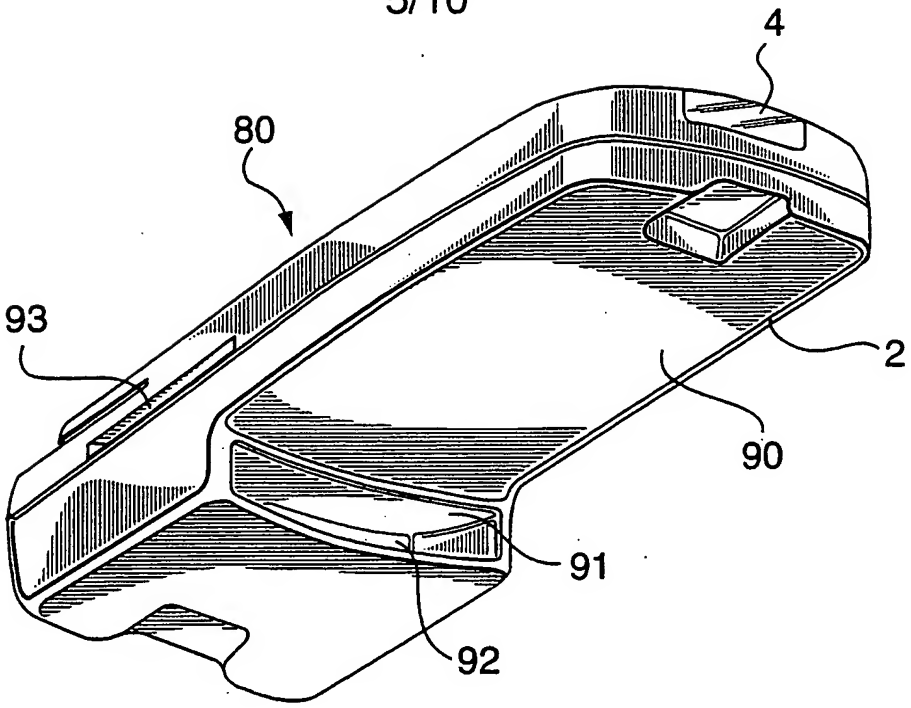


FIG. 5

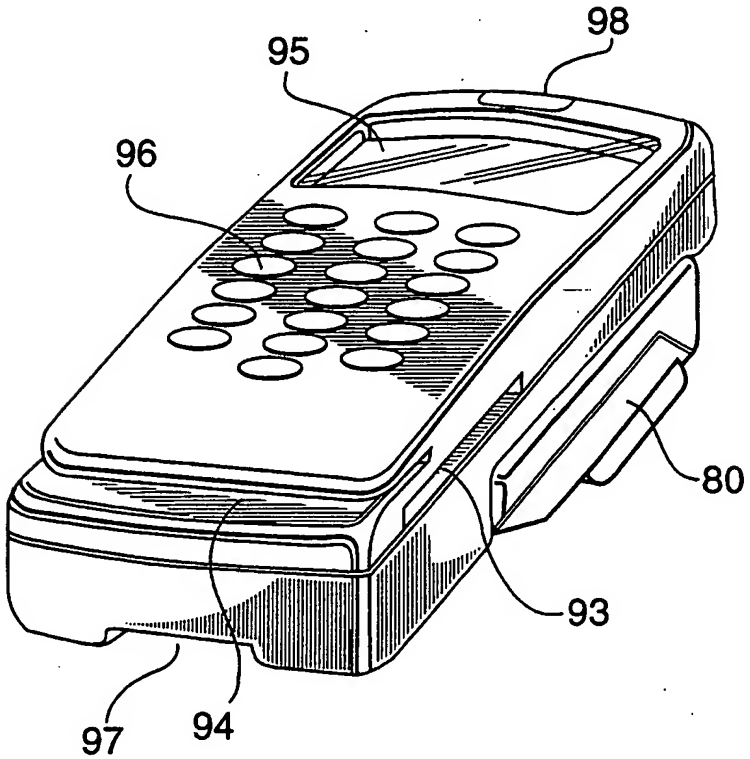


FIG. 5a

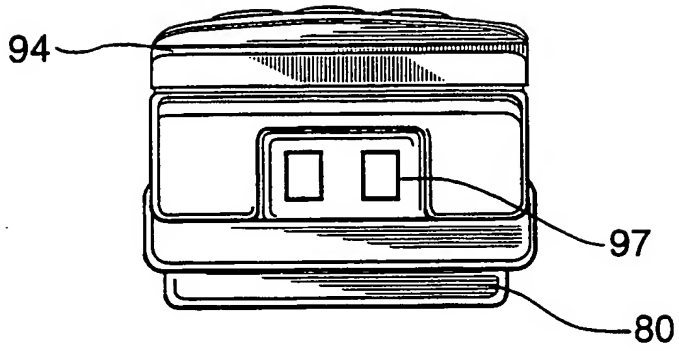


FIG.5b

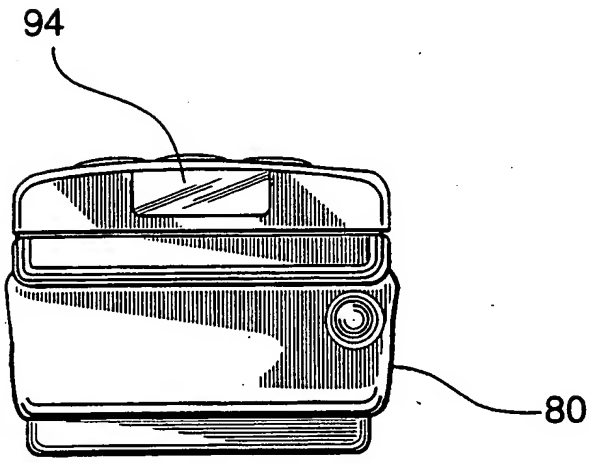


FIG.5c

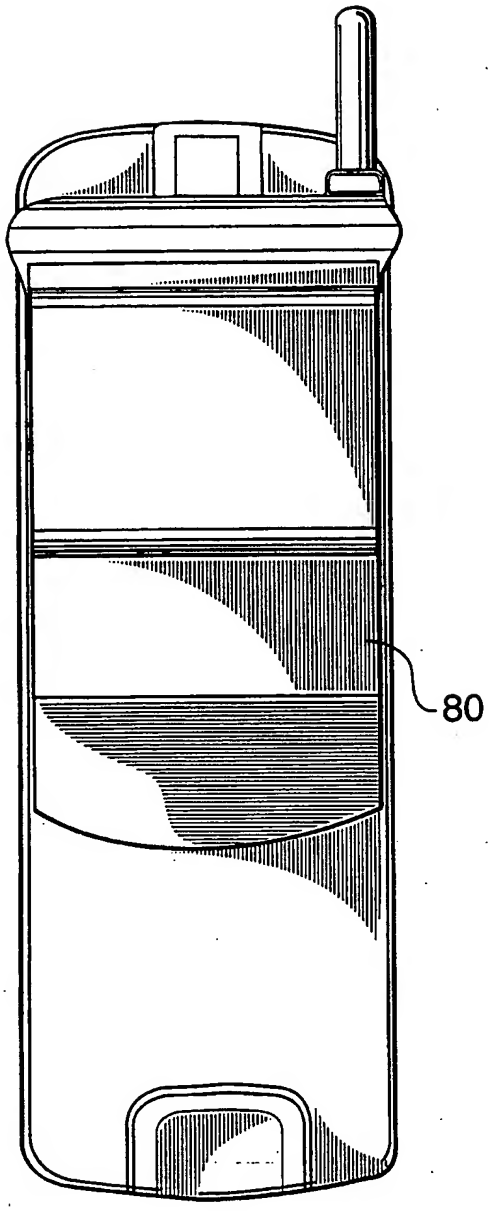


FIG.5d

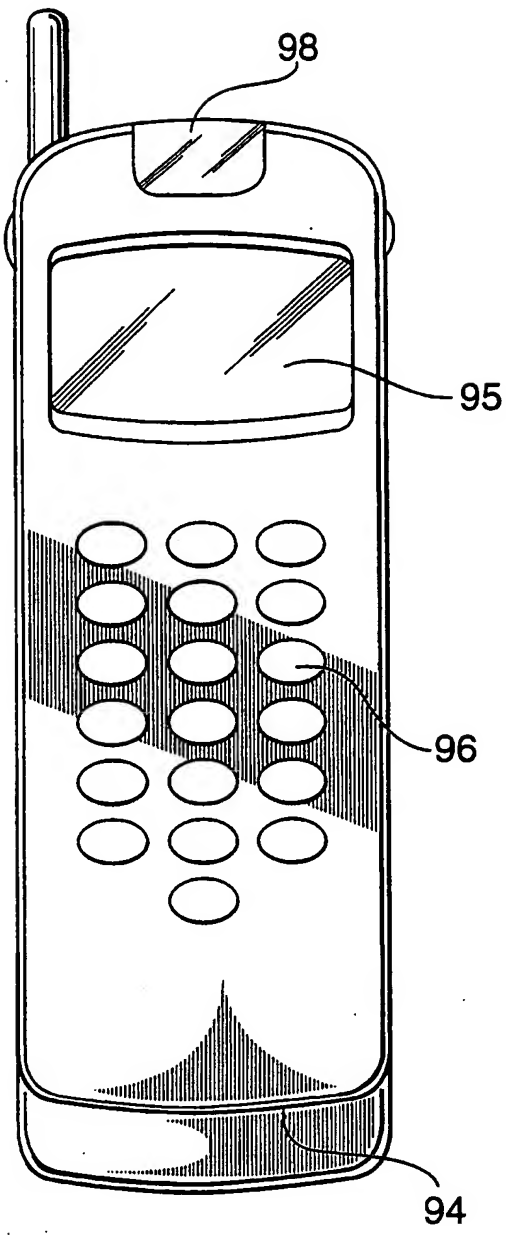


FIG.5e

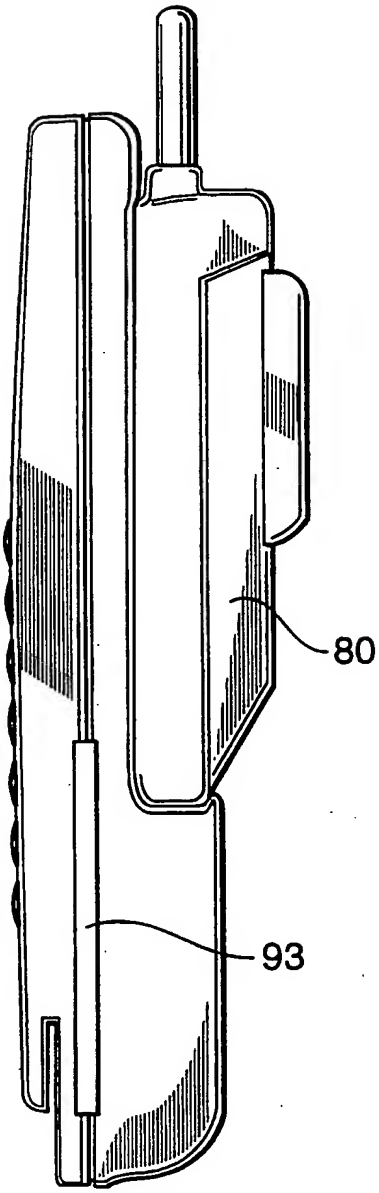


FIG.5f

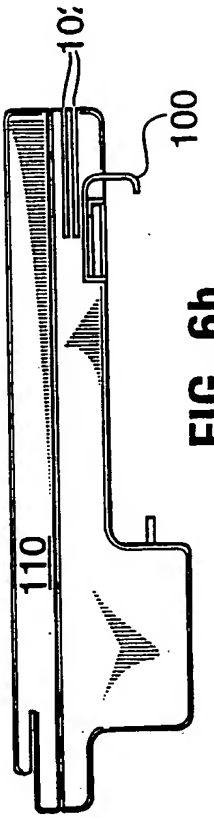


FIG. 6b

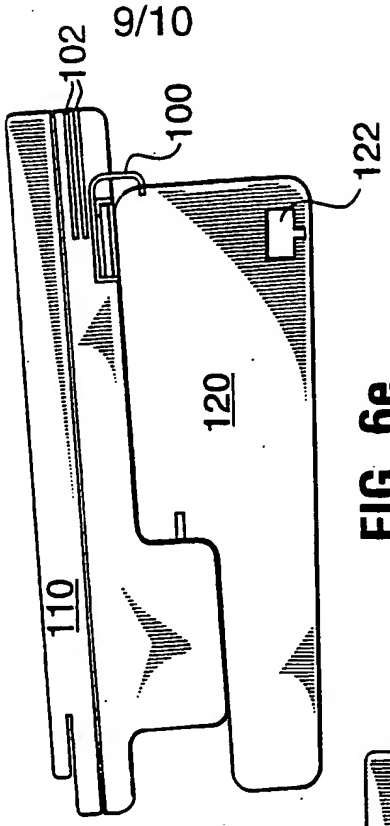


FIG. 6e

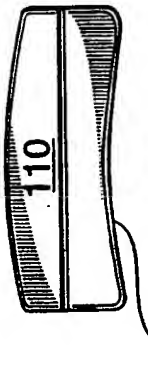


FIG. 6a

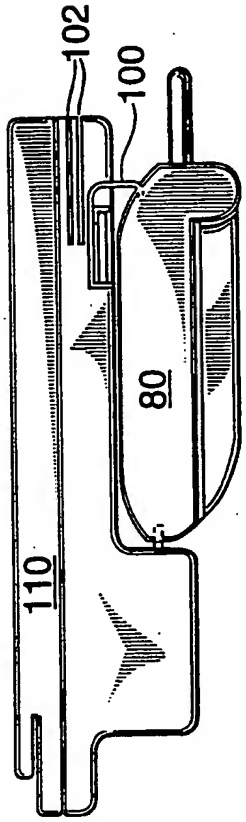


FIG. 6c

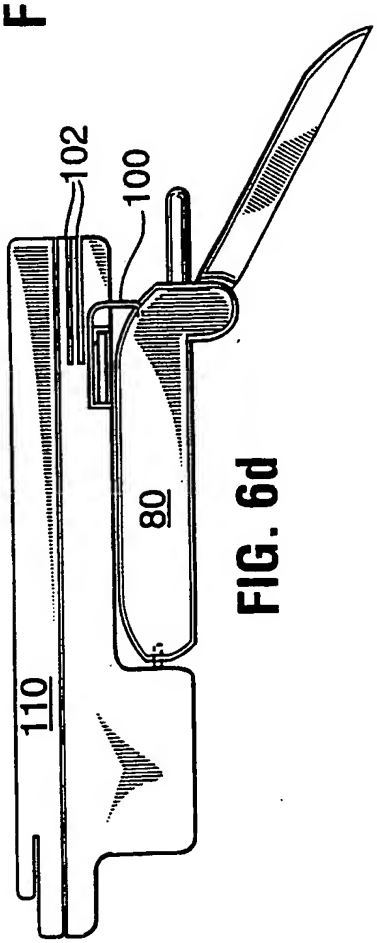


FIG. 6d

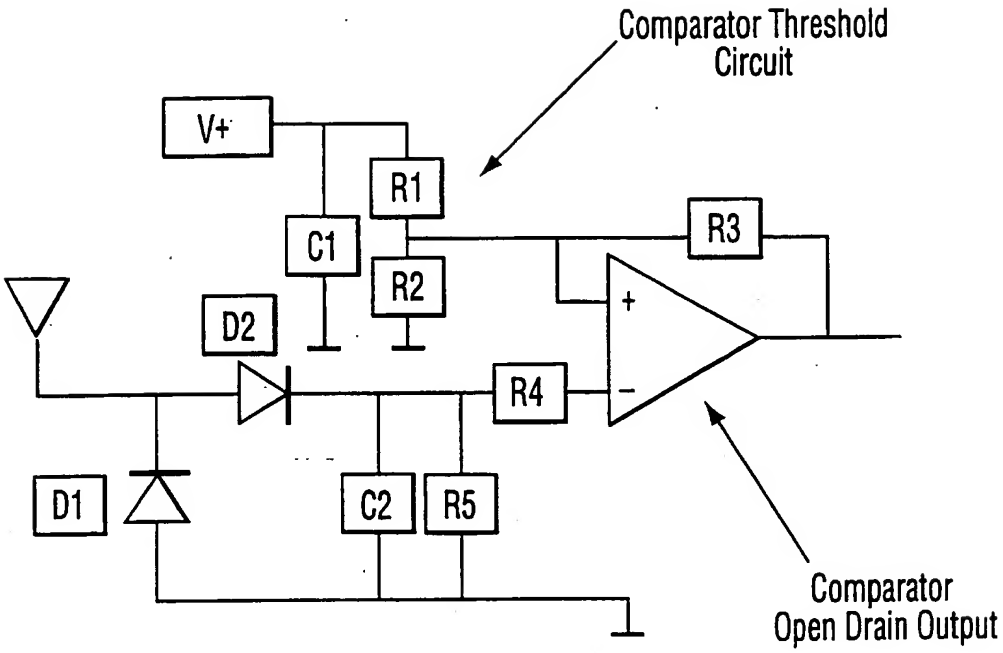

Comparator Threshold Circuit
V+
R1
C1
R2
R3
D2
+
−
R4
D1
C2
R5
Comparator Open Drain Output

FIG. 7

INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/CA 00/01370

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G07F7/10 G07F19/00 H04M1/725

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G07F H04M G06F G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 940 783 A (KEYCORP) 8 September 1999 (1999-09-08)	1,2,4,5, 7-10, 14-17, 19,22
A	the whole document	3,11-13, 20
A	WO 97 04609 A (EII-KONSULTER) 6 February 1997 (1997-02-06)	1,2,4,5, 7,8,10, 11, 14-17, 19,20,22
	abstract; claims; figures page 7, line 19 -page 8, line 20	

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 March 2001	23/03/2001

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	David, J

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inte ional Application No
PCT/CA 00/01370

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 625 839 A (AT & T) 23 November 1994 (1994-11-23) abstract; claims; figures column 5, line 24 -column 7, line 4	1-22
A	WO 96 26505 A (OMEGA DIGITAL DATA) 29 August 1996 (1996-08-29)	
A	DE 197 32 762 A (HAGENUK TELECOM) 5 November 1998 (1998-11-05)	
A	US 5 679 943 A (D.R. SCHULTZ) 21 October 1997 (1997-10-21)	
A	WO 95 20195 A (DYNAMIC DATA SYSTEMS) 27 July 1995 (1995-07-27)	
A	WO 98 58509 A (GENERALDIREKTION PTT) 23 December 1998 (1998-12-23)	

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte onal Application No
PCT/CA 00/01370

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0940783 A	08-09-1999	AU 1130099 A	23-09-1999
		DE 940783 T	20-04-2000
		ES 2140365 T	01-03-2000
		JP 2000030146 A	28-01-2000
WO 9704609 A	06-02-1997	AU 6474396 A	18-02-1997
		EP 0873660 A	28-10-1998
EP 0625839 A	23-11-1994	CA 2120068 A	22-11-1994
		JP 6350739 A	22-12-1994
		NO 941824 A	22-11-1994
WO 9626505 A	29-08-1996	AU 4661396 A	11-09-1996
		BR 9607426 A	17-11-1998
		CA 2213336 A	29-08-1996
		CN 1176011 A	11-03-1998
		EP 0811210 A	10-12-1997
		JP 11500550 T	12-01-1999
		ZA 9601429 A	27-08-1996
DE 19732762 A	05-11-1998	EP 0895203 A	03-02-1999
US 5679943 A	21-10-1997	US 5202817 A	13-04-1993
		US 5218187 A	08-06-1993
		US 5052020 A	24-09-1991
		US 5410141 A	25-04-1995
		US 5202825 A	13-04-1993
		US 5539193 A	23-07-1996
		US 5539194 A	23-07-1996
		US 5917175 A	29-06-1999
		US 5418684 A	23-05-1995
		US 5872354 A	16-02-1999
		US 5530619 A	25-06-1996
		US 5805474 A	08-09-1998
		US 5834753 A	10-11-1998
		US 5898162 A	27-04-1999
		US 5949056 A	07-09-1999
		US 5793604 A	11-08-1998
		US 6023147 A	08-02-2000
		US 5914481 A	22-06-1999
		US 5349497 A	20-09-1994
		AU 9160291 A	08-07-1992
		WO 9210803 A	25-06-1992
		AU 654109 B	27-10-1994
		AU 5856390 A	08-01-1991
		CA 2020357 A	08-12-1990
		CA 2022976 A	08-12-1991
		EP 0667019 A	16-08-1995
		WO 9016033 A	27-12-1990
		US 5517434 A	14-05-1996
		US 5673031 A	30-09-1997
		US 5515303 A	07-05-1996
		US 5747786 A	05-05-1998
		US 5979768 A	09-11-1999
		US 5602456 A	11-02-1997
		US 5305181 A	19-04-1994
		CA 2018154 A	08-12-1990
		US 5587577 A	24-12-1996

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte. onal Application No
PCT/CA 00/01370

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5679943 A		AT 193135 T	15-06-2000
		AU 678135 B	22-05-1997
		AU 1455792 A	15-09-1992
		CA 2104788 A	26-08-1992
		DE 69231057 D	21-06-2000
		DE 69231057 T	15-02-2001
		EP 0573567 A	15-12-1993
		US 5331136 A	19-07-1994
		WO 9215073 A	03-09-1992
		US 5680633 A	21-10-1997
		US 5567925 A	22-10-1996
		US 5313053 A	17-05-1994
		CA 2074169 A	19-07-1991
		EP 0511295 A	04-11-1992
WO 9520195 A	27-07-1995	AU 6641794 A	08-08-1995
		CA 2181999 A	27-07-1995
		CN 1142871 A	12-02-1997
		EP 0741884 A	13-11-1996
		JP 9507719 T	05-08-1997
		NZ 265896 A	26-07-1996
		RU 2124231 C	27-12-1998
		US 6010067 A	04-01-2000
WO 9858509 A	23-12-1998	AU 3022497 A	04-01-1999
		AU 5649598 A	04-01-1999
		WO 9858510 A	23-12-1998
		CN 1260939 T	19-07-2000
		EP 0990355 A	05-04-2000
		EP 0990356 A	05-04-2000
		NO 996145 A	16-02-2000
		NO 996148 A	11-02-2000